DOCUMENT RESUME

ED 146 074 SO 010 335

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TITLE Innovative Techniques for Teaching Research Methods.
PUB DATE 5 Sep 77
NOTE 18p.; Paper presented at Annual Meeting of the American Sociological Association (72nd, Chicago, Illinois, September 5-9, 1977); Not available in hard copy from EDRS due to poor reproducibility of original document

EDRS PRICE MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS Classroom Techniques; Creative Teaching; Educational Strategies; Effective Teaching; Graduate Students; Higher Education; *Instructional Innovation; *Research Methodology; *Sociology; *Teaching Methods; Undergraduate Students

ABSTRACT

An explanation of three innovative techniques the author has used successfully to introduce undergraduate and graduate students to sociological methodology. The three methods are: (1) body-learning, which involves moving students around physically in ways analogous to the data manipulations being taught; (2) experimental learning, which involves having the students personally experience things normally presented cognitively as concepts; and (3) take-away learning, which uses the class meeting to reveal and dissolve misinformation and other considerations the students bring to a topic rather than to impart new information. The use of these techniques helps remove the blocks that often make research methods such a difficult subject for many students. In addition, these techniques make the teaching of research methods stimulating and exciting. The author presents specific examples of techniques for introducing students to three methods of sociological methodology. (DRS)

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# INNOVATIVE TECHNIQUES FOR TEACHING RESEARCH METHODS

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A paper prepared for presentation at the 72nd Annual Meeting of the American Sociological Association, September 5-9, 1977 in Chicago.

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## INTRODUCTION

In this paper, I'd like to discuss some innovative techniques that I've found useful for introducing students to sociological methodology. Each of these techniques has been used both with lower-division undergraduates and with graduate students. They seem equally effective in both settings.

For purposes of shorthand references, I'll refer to the three techniques as (1) body-learning, (2) experiential learning, and (3) take-away lecturing.

In brief preview, body-learning involves moving students around physically in ways analogous to data manipulations. Experiential learning involves having them personally experience things that are normally presented cognitively as concepts. And, finally, take-away lecturing uses class meetings--not to impart information--but to reveal and dissolve misinformation and other considerations students have about the topic at hand.

## BODY-LEARNING

Let's begin with body-learning. I've used this technique in three contexts so far: sampling, contingency-table construction,

and index construction. In the case of sampling, I bring 20 or 30 students to the front of the lecture hall, arrange them in a line, and then begin selecting samples. Simple random sampling and systematic sampling are easily demonstrated. To demonstrate stratified sampling, I usually have te men move to one end of the line and the women to the other. Then I select a systematic sample--with a random start--across the stratified line. I haven't attempted to demonstrate multi-stage cluster sampling in this fashion, though I may give it a go in the future.

To demonstrate the construction of bivariate and trivariate contingency tables, I begin by dividing the class in terms of some independent variable. For example, I have the men move to the left side of the lecture hall and the women to the right. Then I subdivide each group in terms of some dependent variable, say, whether they are majoring in sociology. To do this, I would ask majors to move to the far end of the hall and ask the nonmajors to gather near the stage. With students thus gathered in the four corners of the lecture hall, the relationship between these two variables is immediately evident. At the same time, students have learned the nitty-gritty steps involved in creating a bivariate table.

A trivariate percentage table is demonstrated by having students in each of the four groups either stand or sit as a way of classifying themselves on a third variable. Is church attendance, for example, a function of sex and/or majoring in sociology? To find out, I ask those who attended church within the past week to remain standing, while those who did not are

asked to sit in the vicinity of their group. Both the empirical relationship and--more important--the nature of a trivariate contingency table become immediately apparent. To lend more meaning to the exercise, I ask students to suggest dependent variables, and we test the influence of sex and major of each.

A number of "problems" that always come up in tis exercise provide excellent practical instruction in data analysis. If we look at church attendance, for example, a student may ask whether attending a wedding counts. This leads to a practical discussion of the issues of conceptualization and operationalization. Or, if few students have attended church in the past week--making it impossible to discern a relationship--this leads to a discussion of collapsing categories in data analysis. (e.g., How many attended in the past month?)

Constructing a cumulative index in this fashion works qually well. I begin by asking students to arrive at a variable they might be interested in measuring. Then we discuss possible indicators of the variable. Once we feel we have the raw materials for an index, I ask everyone to move to one side of the lecture hall.

One semester we decided to measure how much people liked pro football. I began the index construction by asking who had attended a pro game: those who had, moved to the far end of the line. Then I asked those in the "football" group whether they could name at least two NFI coaches (another of the indicators we had created). Those who could separated themselves from those who couldn't, creating three groups altogether. Then those in

the "nonfootball" group (in terms of the first indicator) were asked whether they could name two coaches. Those who could joined the middle group, and those who couldn't stayed in place. Another indicator was used to further subdivide the students, resulting in four groups arranged along the side of the lecture hall.

The four groups now represented score-categories on an index of affinity for pro football. To validate the index, I used other indicators suggested by the students. For example, I asked everyone who watched more than half of the televised pro football games to remain standing and everyone else to sit in the vicinity of their index group. Virtually everyone in the "high" group remained standing, with the proportion declining across the groups to virtually nobody standing in the "low" group.

It is my feeling that these exercises give students a clearer sense of the logic and techniques involved in table construction and indexing than anything since the virtual demise of the counter-sorter. Despite my initial fears, students participate in the exercises willingly. The main problem for the instructor is the selection of content that satisfies two conditions:

(1) The variables should be interesting and meaningful: preferably more interesting and meaningful than those I've just described, and

(2) To complicate matters, they should be inocuous enough that students will be willing

to literally stand up and be counted. (I suspect that virginity or masturbation, though perhaps satisfying the first condition, would fail the second.)

## EXPERIENTIAL LEARNING

The second technique I want to discuss is similar to the first, except it is done with students' emotions rather than with their bodies. This technique involves having students experience certain things they would normally only get cognitively. A couple of examples should illustrate this.

In introducing science in general, I discuss those things that make science different from other modes of inquiry. One characteristic of science is openness to modification. Usually, I illustrate this with negative examples, describing, for example, the unfavorable response to Copernican astronomy. Students who "know" that the earth revolves around the sun rather than the reverse can understand that the resistance to that notion represented a closed-mindedness that is antithetical to science. I watch them silently condemning the stupidity of the Middle Ages.

It is my feeling that such a cognitive understanding of the

concept doesn't really bring home to them how real such closure is--even today. So I remedy that lack by having them experience being closed-minded. As a casual footnote to the discussion of Copernicus, I mention that he was probably wrong. Noticing their surprise, I launch into what is by now a rather persuasive thesis that the sun revolves around the earth. Invoking the authority of Einstein, I point out that the motion of one object can only be observed and measured relative to the position of another. Thus, the earth is moving relative to the sun, but the sun is moving relative to the earth. Indeed, our current knowledge of astronomy suggests that everything in the universe in moving, so it's arbitrary what we assume to be stationary for the purpose of observing movement among the rest of the heavenly bodies. Step by step, I reach the position that the entire universe is revolving around Honolulu.

This exposition usually stimulates lively opposition. Some students are clearly uncomfortable, apparently wishing that either the hour or my lengthy aside would end. Once I have offended the sensibilities of just about everyone, I ask them to notice how they are feeling about the position I've been defending. How many are willing to accept the position? How many think I "might" be correct?

Then, I need only point out that what they are experiencing in relation to my "outrageous" astronomy is precisely what people experienced when Copernicus began expounding the "outrageous" view that the earth was flying through space. I have the sense that they come away from the exercise a little more introspective

about open- and closed-mindedness.

There are many notions that students can experience as well as cognitively understand. To make the point that social statuses affect how we experience the day-to-day events of life, I once arranged to have a teaching assistant interrupt my lecture by shouting "AW SHUT UP! LET'S CUT THE CRAP AND GO TO LUNCH." After playing the astounded lecturer for a minute or so, I asked students to notice what they were feeling at that moment and then asked them to imagine how an instructor would experience the same set of events. (Only afterward did I realize the possibility that the TA's remark might have sparked a broad-based agreement for me to shut up and break for lunch.)

It's my notion that when students have experienced elements of sociology and sociological research and had their attention drawn to those experiences, they will have a clear grasp--and possibly a longer rention--of them when they set about learning and doing sociology in the future.

## PLAYING "TAKE-AWAY"

The final technique I want to discuss is a little more elaborate. Whereas classroom instruction typically involves an instructor imparting useful information to students, this

technique involves taking away "information" they already have: things that will get in their way in learning the data of the course.

I use the technique in the following didactic package:

(1) In lecture, I prepare students for a course topic by taking away those things that would keep them from learning it.

(2) Next, they are expected to read the textbook chapter as a way of getting information on the topic.

(3) Third, they are able to get clarification about the topic either in laboratory sections or at the next lecture.

(4) Finally, a workbook accompanying the text allows them to practice what they have learned.

Now let me say something more about the "take-away" step in the process. As before, I can do this best through a set of illustrations.

Unlearning Anti-Statistics

The introductory methods course that I teach doesn't expect very much in the way of statistical sophistication. Lambda, gamma, and chi-square are about all I ask students to compute. Yet, it has always puzzled me why students had so much trouble

with even these simple statistics.

As I discussed this problem with my students, I kept discovering that the presumed problem was a native inability to do mathematics. "I'm just no good at math," was the typical comment. It became apparent that I was trying to teach statistics to a group of people almost all of whom had a congenital defect in math.

I began looking at this amazing phenomenon in lectures. Now, I don't discuss any computations in class--the text explains those simply enough. Instead, I have the students discuss the pictures they have about mathematical ability. We begin with each student recalling that one high-school classmate who was generally acknowledged as a "mathematical genius." I then ask questions about that person. The similarity in what 200 students report is incredible.

Having done this exercise with, by now, about a thousand students, I can reveal to you that there is a math-monster abroad who has haunted every high school class in recent memory. A thousand eye-witness accounts confirm that it is the same person, and I'll describe him to you so that you can be on the lookout for him.

(1) He is a male caucasian.

(2) He wears glasses and is not very athletic, though he sometimes appear skinny and other times obese.

(3) He isn't invited to many parties, and, when invited, doesn't mix well. He is, in short,

a social misfit.

(4) He is never anyone's best friend.

(5) Perhaps his most striking feature is what appears to be terminal acne. He has zits in places other people don't have places.

To be sure, a few students report a few exceptions to the composite portrait, but the consistency of their accounts surpasses any known sociological finding. I'd need to transform the math-monster's pimples into zeros in order to express the statistical significance of the finding. And all my students agree that the math-monster's profile isn't very flattering.

Having determined the math-monster's profile, I ask how many of my students ever wished they could trade places with the mathematical genius in their high-school class. Nobody seems to have wished that.

Finally, I ask them to imagine how they would feel if they were generally regarded as a whiz at statistics. How would they feel if they overheard me referring to them as my prized student in statistics. "I wish everyone could do statistics as well as Mary. She's a natural." Very few say they would be realy comfortable with that.

It has become clear to me and has become clear to my students that most of them are muddling through statistics with a secret fear of success. Most would be crushed to find out they were capable of comprehending and manipulating statistics. I am pleased to report that they are now computing lambda, gamma, and chi-square with reasonable proficiency, and I haven't heard of

anyone's face breaking out as a result of that.

Confronting Determinism

I am learning that students have preconceptions, misconceptions, and misgivings that complicte just about every topic that comes up in research methods. None is heavier, however, than their feelings about determinism.

Prior to assigning a chapter on the logic of causation, I spend an entire lecture hour on the deterministic model that lies behind all explanatory science. We begin with cause-and-effect determinism in relation to gravity and falling objects. This presents no discernible threat to anyone. But then, we turn to the explanation of social behavior.

I ask students to imagine a researcher getting a million-dollar NSF grant to discover the causes of prejudice. (You might like to imagine that yourself.) Then, I ask them to imagine that the researcher does the research, spends the money, and sends NSF a one-sentence report that says: "Some people want to be prejudiced and others don't." Finally, I ask students to imagine the letter NSF would send to the researcher's dean.

They can see in this that social scientific explanation involves the discovery of causes of social behavior and attitudes that stand outside of individuals' volitions. Indeed, social scientists often discover causes that those caused don't recognize. It becomes clear in all this that social science is

based on an implicit belief that people have no individual freedom. People are seen implicitly as machines, robots. It's just that we're too polite to talk about it--usually.

In case it hasn't occurred to them--it usually has--I point out that they are not exempt from this view. Social scientists operate with a model of human behavior that denies my students any freedom. At this point, I invite students to refute the model, asking them for any specific example of something they've done that was a result of their own personal volition. Crafty devil that I am, they always lose.

No matter what act they offer as proof of their freedom, I respond by asking "why" they did it. The reason they offer then becomes the cause of their automatic, machine-like behavior. You can to class of your own free will? Why did you come, then? Because you wanted to learn something? Great, your behavior was caused by the desire to learn something. You didn't have a choice in the matter. Anybody with your desire to learn would have come.

When they object to the simplicity of the explanation, I get some of the additional reasons they had for their action, always pointing out that anybody with their particular configuration of reasons would have been equally "forced" to do what they did. Usually, some student reports having had the same reasons but that he or she didn't do the same thing. A minute or two is usually sufficient for uncovering the additional reasons that "forced" that student to do something different.

Students have been so thoroughly trained to be reasonable

that they are trapped by their reasons. As they begin to realize that they will lose every argument in this exercise, it begins to get uncomfortable for many. Once this has been created, we are ready for the next step in the exercise.

I point out--if none of my students has mentioned it--that the deterministic model has predeterministic implications. Describing the universe as a complex Rube Goldberg ecosystem, I point out that whatever happens in a particular instant of time is totally predetermined by what happened in the prior instant of time and that the chain of determinism goes on and on. What they will eat for breakfast a year from now--not to mention (and I usually do) whether they'll be here a year from now--is already determined: today, now, this instant. They don't have any choice in the matter.

By now things have gotten very uncomfortable. Students are unhappy with the ontological system I've been describing, yet none is able to disprove it. I make certain that they all realize that this state of affairs is an inevitable extension of the deterministic model implicit in scientific explanation.

The exercise ends with me pointing out that scientists don't necessarily "believe" that everything is determined and predetermined. In fact, scientists seem to live their lives with a belief that they possess individual freedom. I indicate that I don't believe in total determinism. I also demonstrate the irony that the totally deterministic, ecosystemic model I've described makes total freedom and total unfreedom the same thing, and some of them get that.

The point of the exercise, however, is that scientists have to take a deterministic point of view in order to engage in scientific explanation. If they want to do scientific research, then, they have to be willing to take that point of view, even if its logical implications are uncomfortable for them and contradict their day-to-day experiences.

I usually draw an analogy to playing Monopoly. In order to play, you may be required to take the point of view of the scottie dog. You don't have to believe you <u>are</u> the scottie dog. You don't have to believe scottie dogs exist, even. But you do have to be willing to take that point of view if you want to play. The same is true of determinism and playing science.

My notion in going through this exercise is that as students come to learn and do social scientific research, the deterministic and predeterministic implications of it all will begin dawning on them--and least subconsciously. Ironically, the better they become at explaining certain types of social attitudes and behaviors, the more uncomfortable they are likely to become. I draw this conclusion from countless collegial experiences.

My purpose is to bring the issue to the surface at the outset. I don't want any hidden fears in my students that their scientific activities may imply that they themselves have no freedom. The lecture session realizes those fears totally and gets students to the other side of them. Otherwise, I think they would run the risk of trying to do scientific explanation with a hidden fear that they might be successful and therefore lose

their freedom. This is akin to studying statistics with a fear of acne.

## Summary

In summary, I've found that students come to a research methods course (or any other) with a number of hidden agendas. Many of those clearer stand in the way of their comprehending and getting value from the materials of the course. I have learned that whenever what I have to present conflicts with what they bring to class, my attempt to communicate always fails. Pressing, repeating, and underscoring the materials I have for them only seems to further solidify their resistance to it.

What I now do instead is bring their own stuff to the surface, letting them realize what they have tucked away in the back of their heads. I don't really ask them to give up their own points of view. I merely let them see how those points of view conflict with the materials comprising sociological research methods. That way, they have a choice to give up their own view, reject the sociological one, or--my personal preference--hold both views for use as they see fit.

## CONCLUSION

These, then, are a few of the techniques I've been experimenting with in connection with the presentation of sociological research methods in the classroom. I have no rigorous evaluation data to determine their effectiveness, though my sense is that they are generally successful. Student evaluations clearly indicate that they are popular.

At the very least, techniques such as these make the teaching of research methods stimulating and exciting, if a little scary in the bargain. I find that I look forward to going to class and somewhat resent holidays that get in the way of that. I find that I get clearer about research methods whenever I am able to let my students participate in my education as well as their own.